

SEQUENCE LISTING

<110> Crooke et al.

<120> ANTISENSE MODULATION OF APOLIPOPROTEIN B EXPRESSION

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<150> US 60/426,234

<151> 2002-11-13

<150> PCT/US03/15493

<151> 2003-05-13

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<220>

<221> CDS

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Gly Val Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys	
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560 565 570	
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595 600 605	
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Tyr	Cys	Thr	Ser	Gly	Ala	Tyr	Ser	Asn	Ala	Ser	Ser	Thr	Asp	Ser	Ala	
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Ser	Tyr	Tyr	Pro	Leu	Thr	Gly	Asp	Thr	Arg	Leu	Glu	Leu	Glu	Leu	Arg	
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Pro	Thr	Gly	Glu	Ile	Glu	Gln	Tyr	Ser	Val	Ser	Ala	Thr	Tyr	Glu	Leu	
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Pro Lys Leu Tyr Gln Leu Gln Val Pro Leu Leu Gly Val Leu Asp Leu			
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Asn Leu Arg Phe Asn Ser Ser Tyr Leu Gln Gly Thr Asn Gln Ile Thr			
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Thr Ser Asn Lys Met Asp Met Thr Phe Ser Lys Gln Asn Ala Leu Leu	
1585 1590 1595	
cgt tct gaa tat cag gct gat tac gag tca ttg agg ttc ttc agc ctg	4970
Arg Ser Glu Tyr Gln Ala Asp Tyr Glu Ser Leu Arg Phe Phe Ser Leu	
1600 1605 1610	
ctt tct gga tca cta aat tcc cat ggt ctt gag tta aat gct gac atc	5018
Leu Ser Gly Ser Leu Asn Ser His Gly Leu Glu Leu Asn Ala Asp Ile	
1615 1620 1625 1630	
tta ggc act gac aaa att aat agt ggt gct cac aag gcg aca cta agg	5066
Leu Gly Thr Asp Lys Ile Asn Ser Gly Ala His Lys Ala Thr Leu Arg	
1635 1640 1645	
att ggc caa gat gga ata tct acc agt gca acg acc aac ttg aag tgt	5114
Ile Gly Gln Asp Gly Ile Ser Thr Ser Ala Thr Thr Asn Leu Lys Cys	
1650 1655 1660	
agt ctc ctg gtg ctg gag aat gag ctg aat gca gag ctt ggc ctc tct	5162
Ser Leu Leu Val Leu Glu Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser	
1665 1670 1675	
ggg gca tct atg aaa tta aca aca aat ggc cgc ttc agg gaa cac aat	5210
Gly Ala Ser Met Lys Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn	
1680 1685 1690	
gca aaa ttc agt ctg gat ggg aaa gcc gcc ctc aca gag cta tca ctg	5258
Ala Lys Phe Ser Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu	
1695 1700 1705 1710	
gga agt gct tat cag gcc atg att ctg ggt gtc gac agc aaa aac att	5306
Gly Ser Ala Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile	
1715 1720 1725	
ttc aac ttc aag gtc agt caa gaa gga ctt aag ctc tca aat gac atg	5354
Phe Asn Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met	
1730 1735 1740	
atg ggc tca tat gct gaa atg aaa ttt gac cac aca aac agt ctg aac	5402
Met Gly Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn	
1745 1750 1755	
att gca ggc tta tca ctg gac ttc tct tca aaa ctt gac aac att tac	5450
Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile Tyr	
1760 1765 1770	
agc tct gac aag ttt tat aag caa act gtt aat tta cag cta cag ccc	5498
Ser Ser Asp Lys Phe Tyr Lys Gln Thr Val Asn Leu Gln Leu Gln Pro	

1775	1780	1785	1790	
tat tct ctg gta act act tta aac agt gac ctg aaa tac aat gct ctg				5546
Tyr Ser Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr Asn Ala Leu				
	1795	1800	1805	
gat ctc acc aac aat ggg aaa cta cgg cta gaa ccc ctg aag ctg cat				5594
Asp Leu Thr Asn Asn Gly Lys Leu Arg Leu Glu Pro Leu Lys Leu His				
	1810	1815	1820	
gtg gct ggt aac cta aaa gga gcc tac caa aat aat gaa ata aaa cac				5642
Val Ala Gly Asn Leu Lys Gly Ala Tyr Gln Asn Asn Glu Ile Lys His				
	1825	1830	1835	
atc tat gcc atc tct tct gct gcc tta tca gca agc tat aaa gca gac				5690
Ile Tyr Ala Ile Ser Ser Ala Ala Leu Ser Ala Ser Tyr Lys Ala Asp				
	1840	1845	1850	
act gtt gct aag gtt cag ggt gtg gag ttt agc cat cgg ctc aac aca				5738
Thr Val Ala Lys Val Gln Gly Val Glu Phe Ser His Arg Leu Asn Thr				
	1855	1860	1865	1870
gac atc gct ggg ctg gct tca gcc att gac atg agc aca aac tat aat				5786
Asp Ile Ala Gly Leu Ala Ser Ala Ile Asp Met Ser Thr Asn Tyr Asn				
	1875	1880	1885	
tca gac tca ctg cat ttc agc aat gtc ttc cgt tct gta atg gcc ccg				5834
Ser Asp Ser Leu His Phe Ser Asn Val Phe Arg Ser Val Met Ala Pro				
	1890	1895	1900	
ttt acc atg acc atc gat gca cat aca aat ggc aat ggg aaa ctc gct				5882
Phe Thr Met Thr Ile Asp Ala His Thr Asn Gly Asn Gly Lys Leu Ala				
	1905	1910	1915	
ctc tgg gga gaa cat act ggg cag ctg tat agc aaa ttc ctg ttg aaa				5930
Leu Trp Gly Glu His Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu Lys				
	1920	1925	1930	
gca gaa cct ctg gca ttt act ttc tct cat gat tac aaa ggc tcc aca				5978
Ala Glu Pro Leu Ala Phe Thr Phe Ser His Asp Tyr Lys Gly Ser Thr				
	1935	1940	1945	1950
agt cat cat ctc gtg tct agg aaa agc atc agt gca gct ctt gaa cac				6026
Ser His His Leu Val Ser Arg Lys Ser Ile Ser Ala Ala Leu Glu His				
	1955	1960	1965	
aaa gtc agt gcc ctg ctt act cca gct gag cag aca ggc acc tgg aaa				6074
Lys Val Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys				
	1970	1975	1980	
ctc aag acc caa ttt aac aac aat gaa tac agc cag gac ttg gat gct				6122
Leu Lys Thr Gln Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala				
	1985	1990	1995	
tac aac act aaa gat aaa att ggc gtg gag ctt act gga cga act ctg				6170
Tyr Asn Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr Leu				
	2000	2005	2010	
gct gac cta act cta cta gac tcc cca att aaa gtg cca ctt tta ctc				6218
Ala Asp Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu Leu Leu				
	2015	2020	2025	2030
agt gag ccc atc aat atc att gat gct tta gag atg aga gat gcc gtt				6266

Ser	Glu	Pro	Ile	Asn	Ile	Ile	Asp	Ala	Leu	Glu	Met	Arg	Asp	Ala	Val		
				2035					2040					2045			
gag	aag	ccc	caa	gaa	ttt	aca	att	gtt	gct	ttt	gta	aag	tat	gat	aaa	6314	
Glu	Lys	Pro	Gln	Glu	Phe	Thr	Ile	Val	Ala	Phe	Val	Lys	Tyr	Asp	Lys		
			2050					2055				2060					
aac	caa	gat	gtt	cac	tcc	att	aac	ctc	cca	ttt	ttt	gag	acc	ttg	caa	6362	
Asn	Gln	Asp	Val	His	Ser	Ile	Asn	Leu	Pro	Phe	Phe	Glu	Thr	Leu	Gln		
		2065					2070					2075					
gaa	tat	ttt	gag	agg	aat	cga	caa	acc	att	ata	gtt	gta	gtg	gaa	aac	6410	
Glu	Tyr	Phe	Glu	Arg	Asn	Arg	Gln	Thr	Ile	Ile	Val	Val	Val	Glu	Asn		
	2080					2085				2090							
gta	cag	aga	aac	ctg	aag	cac	atc	aat	att	gat	caa	ttt	gta	aga	aaa	6458	
Val	Gln	Arg	Asn	Leu	Lys	His	Ile	Asn	Ile	Asp	Gln	Phe	Val	Arg	Lys		
2095				2100				2105							2110		
tac	aga	gca	gcc	ctg	gga	aaa	ctc	cca	cag	caa	gct	aat	gat	tat	ctg	6506	
Tyr	Arg	Ala	Ala	Leu	Gly	Lys	Leu	Pro	Gln	Gln	Ala	Asn	Asp	Tyr	Leu		
			2115					2120						2125			
aat	tca	ttc	aat	tgg	gag	aga	caa	gtt	tca	cat	gcc	aag	gag	aaa	ctg	6554	
Asn	Ser	Phe	Asn	Trp	Glu	Arg	Gln	Val	Ser	His	Ala	Lys	Glu	Lys	Leu		
			2130					2135					2140				
act	gct	ctc	aca	aaa	aag	tat	aga	att	aca	gaa	aat	gat	ata	caa	att	6602	
Thr	Ala	Leu	Thr	Lys	Lys	Tyr	Arg	Ile	Thr	Glu	Asn	Asp	Ile	Gln	Ile		
		2145					2150					2155					
gca	tta	gat	gat	gcc	aaa	atc	aac	ttt	aat	gaa	aaa	cta	tct	caa	ctg	6650	
Ala	Leu	Asp	Asp	Ala	Lys	Ile	Asn	Phe	Asn	Glu	Lys	Leu	Ser	Gln	Leu		
	2160					2165				2170							
cag	aca	tat	atg	ata	caa	ttt	gat	cag	tat	att	aaa	gat	agt	tat	gat	6698	
Gln	Thr	Tyr	Met	Ile	Gln	Phe	Asp	Gln	Tyr	Ile	Lys	Asp	Ser	Tyr	Asp		
2175				2180				2185						2190			
tta	cat	gat	ttg	aaa	ata	gct	att	gct	aat	att	att	gat	gaa	atc	att	6746	
Leu	His	Asp	Leu	Lys	Ile	Ala	Ile	Ala	Asn	Ile	Ile	Asp	Glu	Ile	Ile		
			2195					2200						2205			
gaa	aaa	tta	aaa	agt	ctt	gat	gag	cac	tat	cat	atc	cgt	gta	aat	tta	6794	
Glu	Lys	Leu	Lys	Ser	Leu	Asp	Glu	His	Tyr	His	Ile	Arg	Val	Asn	Leu		
		2210					2215					2220					
gta	aaa	aca	atc	cat	gat	cta	cat	ttg	ttt	att	gaa	aat	att	gat	ttt	6842	
Val	Lys	Thr	Ile	His	Asp	Leu	His	Leu	Phe	Ile	Glu	Asn	Ile	Asp	Phe		
		2225				2230					2235						
aac	aaa	agt	gga	agt	agt	act	gca	tcc	tgg	att	caa	aat	gtg	gat	act	6890	
Asn	Lys	Ser	Gly	Ser	Ser	Thr	Ala	Ser	Trp	Ile	Gln	Asn	Val	Asp	Thr		
	2240					2245				2250							
aag	tac	caa	atc	aga	atc	cag	ata	caa	gaa	aaa	ctg	cag	cag	ctt	aag	6938	
Lys	Tyr	Gln	Ile	Arg	Ile	Gln	Ile	Gln	Glu	Lys	Leu	Gln	Gln	Leu	Lys		
2255				2260				2265						2270			
aga	cac	ata	cag	aat	ata	gac	atc	cag	cac	cta	gct	gga	aag	tta	aaa	6986	
Arg	His	Ile	Gln	Asn	Ile	Asp	Ile	Gln	His	Leu	Ala	Gly	Lys	Leu	Lys		
			2275					2280						2285			

caa cac att gag gct att gat gtt aga gtg ctt tta gat caa ttg gga	7034
Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu Asp Gln Leu Gly	
2290 2295 2300	
act aca att tca ttt gaa aga ata aat gat gtt ctt gag cat gtc aaa	7082
Thr Thr Ile Ser Phe Glu Arg Ile Asn Asp Val Leu Glu His Val Lys	
2305 2310 2315	
cac ttt gtt ata aat ctt att ggg gat ttt gaa gta gct gag aaa atc	7130
His Phe Val Ile Asn Leu Ile Gly Asp Phe Glu Val Ala Glu Lys Ile	
2320 2325 2330	
aat gcc ttc aga gcc aaa gtc cat gag tta atc gag agg tat gaa gta	7178
Asn Ala Phe Arg Ala Lys Val His Glu Leu Ile Glu Arg Tyr Glu Val	
2335 2340 2345 2350	
gac caa caa atc cag gtt tta atg gat aaa tta gta gag ttg acc cac	7226
Asp Gln Gln Ile Gln Val Leu Met Asp Lys Leu Val Glu Leu Thr His	
2355 2360 2365	
caa tac aag ttg aag gag act att cag aag cta agc aat gtc cta caa	7274
Gln Tyr Lys Leu Lys Glu Thr Ile Gln Lys Leu Ser Asn Val Leu Gln	
2370 2375 2380	
caa gtt aag ata aaa gat tac ttt gag aaa ttg gtt gga ttt att gat	7322
Gln Val Lys Ile Lys Asp Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp	
2385 2390 2395	
gat gct gtg aag aag ctt aat gaa tta tct ttt aaa aca ttc att gaa	7370
Asp Ala Val Lys Lys Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu	
2400 2405 2410	
gat gtt aac aaa ttc ctt gac atg ttg ata aag aaa tta aag tca ttt	7418
Asp Val Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe	
2415 2420 2425 2430	
gat tac cac cag ttt gta gat gaa acc aat gac aaa atc cgt gag gtg	7466
Asp Tyr His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val	
2435 2440 2445	
act cag aga ctc aat ggt gaa att cag gct ctg gaa cta cca caa aaa	7514
Thr Gln Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys	
2450 2455 2460	
gct gaa gca tta aaa ctg ttt tta gag gaa acc aag gcc aca gtt gca	7562
Ala Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala	
2465 2470 2475	
gtg tat ctg gaa agc cta cag gac acc aaa ata acc tta atc atc aat	7610
Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile Asn	
2480 2485 2490	
tgg tta cag gag gct tta agt tca gca tct ttg gct cac atg aag gcc	7658
Trp Leu Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met Lys Ala	
2495 2500 2505 2510	
aaa ttc cga gag act cta gaa gat aca cga gac cga atg tat caa atg	7706
Lys Phe Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met Tyr Gln Met	
2515 2520 2525	
gac att cag cag gaa ctt caa cga tac ctg tct ctg gta ggc cag gtt	7754

Asp Ile Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu Val Gly Gln Val	
2530 2535 2540	
tat agc aca ctt gtc acc tac att tct gat tgg tgg act ctt gct gct	7802
Tyr Ser Thr Leu Val Thr Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala	
2545 2550 2555	
aag aac ctt act gac ttt gca gag caa tat tct atc caa gat tgg gct	7850
Lys Asn Leu Thr Asp Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala	
2560 2565 2570	
aaa cgt atg aaa gca ttg gta gag caa ggg ttc act gtt cct gaa atc	7898
Lys Arg Met Lys Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile	
2575 2580 2585 2590	
aag acc atc ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct	7946
Lys Thr Ile Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala	
2595 2600 2605	
ctt cag aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca	7994
Leu Gln Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr	
2610 2615 2620	
gat ttg agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat	8042
Asp Leu Arg Ile Pro Ser Val Gln Ile Asn Phe Lys Asp Leu Lys Asn	
2625 2630 2635	
ata aaa atc cca tcc agg ttt tcc aca cca gaa ttt acc atc ctt aac	8090
Ile Lys Ile Pro Ser Arg Phe Ser Thr Pro Glu Phe Thr Ile Leu Asn	
2640 2645 2650	
acc ttc cac att cct tcc ttt aca att gac ttt gtc gaa atg aaa gta	8138
Thr Phe His Ile Pro Ser Phe Thr Ile Asp Phe Val Glu Met Lys Val	
2655 2660 2665 2670	
aag atc atc aga acc att gac cag atg cag aac agt gag ctg cag tgg	8186
Lys Ile Ile Arg Thr Ile Asp Gln Met Gln Asn Ser Glu Leu Gln Trp	
2675 2680 2685	
ccc gtt cca gat ata tat ctc agg gat ctg aag gtg gag gac att cct	8234
Pro Val Pro Asp Ile Tyr Leu Arg Asp Leu Lys Val Glu Asp Ile Pro	
2690 2695 2700	
cta gcg aga atc acc ctg cca gac ttc cgt tta cca gaa atc gca att	8282
Leu Ala Arg Ile Thr Leu Pro Asp Phe Arg Leu Pro Glu Ile Ala Ile	
2705 2710 2715	
cca gaa ttc ata atc cca act ctc aac ctt aat gat ttt caa gtt cct	8330
Pro Glu Phe Ile Ile Pro Thr Leu Asn Leu Asn Asp Phe Gln Val Pro	
2720 2725 2730	
gac ctt cac ata cca gaa ttc cag ctt ccc cac atc tca cac aca att	8378
Asp Leu His Ile Pro Glu Phe Gln Leu Pro His Ile Ser His Thr Ile	
2735 2740 2745 2750	
gaa gta cct act ttt ggc aag cta tac agt att ctg aaa atc caa tct	8426
Glu Val Pro Thr Phe Gly Lys Leu Tyr Ser Ile Leu Lys Ile Gln Ser	
2755 2760 2765	
cct ctt ttc aca tta gat gca aat gct gac ata ggg aat gga acc acc	8474
Pro Leu Phe Thr Leu Asp Ala Asn Ala Asp Ile Gly Asn Gly Thr Thr	

2770	2775	2780	
tca gca aac gaa gca ggt atc gca gct tcc atc act gcc aaa gga gag Ser Ala Asn Glu Ala Gly Ile Ala Ala Ser Ile Thr Ala Lys Gly Glu 2785 2790 2795			8522
tcc aaa tta gaa gtt ctc aat ttt gat ttt caa gca aat gca caa ctc Ser Lys Leu Glu Val Leu Asn Phe Asp Phe Gln Ala Asn Ala Gln Leu 2800 2805 2810			8570
tca aac cct aag att aat ccg ctg gct ctg aag gag tca gtg aag ttc Ser Asn Pro Lys Ile Asn Pro Leu Ala Leu Lys Glu Ser Val Lys Phe 2815 2820 2825 2830			8618
tcc agc aag tac ctg aga acg gag cat ggg agt gaa atg ctg ttt ttt Ser Ser Lys Tyr Leu Arg Thr Glu His Gly Ser Glu Met Leu Phe Phe 2835 2840 2845			8666
gga aat gct att gag gga aaa tca aac aca gtg gca agt tta cac aca Gly Asn Ala Ile Glu Gly Lys Ser Asn Thr Val Ala Ser Leu His Thr 2850 2855 2860			8714
gaa aaa aat aca ctg gag ctt agt aat gga gtg att gtc aag ata aac Glu Lys Asn Thr Leu Glu Leu Ser Asn Gly Val Ile Val Lys Ile Asn 2865 2870 2875			8762
aat cag ctt acc ctg gat agc aac act aaa tac ttc cac aaa ttg aac Asn Gln Leu Thr Leu Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn 2880 2885 2890			8810
atc ccc aaa ctg gac ttc tct agt cag gct gac ctg cgc aac gag atc Ile Pro Lys Leu Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile 2895 2900 2905 2910			8858
aag aca ctg ttg aaa gct ggc cac ata gca tgg act tct tct gga aaa Lys Thr Leu Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys 2915 2920 2925			8906
ggg tca tgg aaa tgg gcc tgc ccc aga ttc tca gat gag gga aca cat Gly Ser Trp Lys Trp Ala Cys Pro Arg Phe Ser Asp Glu Gly Thr His 2930 2935 2940			8954
gaa tca caa att agt ttc acc ata gaa gga ccc ctc act tcc ttt gga Glu Ser Gln Ile Ser Phe Thr Ile Glu Gly Pro Leu Thr Ser Phe Gly 2945 2950 2955			9002
ctg tcc aat aag atc aat agc aaa cac cta aga gta aac caa aac ttg Leu Ser Asn Lys Ile Asn Ser Lys His Leu Arg Val Asn Gln Asn Leu 2960 2965 2970			9050
gtt tat gaa tct ggc tcc ctc aac ttt tct aaa ctt gaa att caa tca Val Tyr Glu Ser Gly Ser Leu Asn Phe Ser Lys Leu Glu Ile Gln Ser 2975 2980 2985 2990			9098
caa gtc gat tcc cag cat gtg ggc cac agt gtt cta act gct aaa ggc Gln Val Asp Ser Gln His Val Gly His Ser Val Leu Thr Ala Lys Gly 2995 3000 3005			9146
atg gca ctg ttt gga gaa ggg aag gca gag ttt act ggg agg cat gat Met Ala Leu Phe Gly Glu Gly Lys Ala Glu Phe Thr Gly Arg His Asp 3010 3015 3020			9194
gct cat tta aat gga aag gtt att gga act ttg aaa aat tct ctt ttc			9242

Ala His Leu Asn Gly Lys Val	Ile Gly Thr Leu Lys Asn Ser Leu Phe	
3025	3030	3035
ttt tca gcc cag cca ttt gag atc acg gca tcc aca aac aat gaa ggg		9290
Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala Ser Thr Asn Asn Glu Gly		
3040	3045	3050
aat ttg aaa gtt cgt ttt cca tta agg tta aca ggg aag ata gac ttc		9338
Asn Leu Lys Val Arg Phe Pro Leu Arg Leu Thr Gly Lys Ile Asp Phe		
3055	3060	3065 3070
ctg aat aac tat gca ctg ttt ctg agt ccc agt gcc cag caa gca agt		9386
Leu Asn Asn Tyr Ala Leu Phe Leu Ser Pro Ser Ala Gln Gln Ala Ser		
3075	3080	3085
tgg caa gta agt gct agg ttc aat cag tat aag tac aac caa aat ttc		9434
Trp Gln Val Ser Ala Arg Phe Asn Gln Tyr Lys Tyr Asn Gln Asn Phe		
3090	3095	3100
tct gct gga aac aac gag aac att atg gag gcc cat gta gga ata aat		9482
Ser Ala Gly Asn Asn Glu Asn Ile Met Glu Ala His Val Gly Ile Asn		
3105	3110	3115
gga gaa gca aat ctg gat ttc tta aac att cct tta aca att cct gaa		9530
Gly Glu Ala Asn Leu Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu		
3120	3125	3130
atg cgt cta cct tac aca ata atc aca act cct cca ctg aaa gat ttc		9578
Met Arg Leu Pro Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe		
3135	3140	3145 3150
tct cta tgg gaa aaa aca ggc ttg aag gaa ttc ttg aaa acg aca aag		9626
Ser Leu Trp Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys		
3155	3160	3165
caa tca ttt gat tta agt gta aaa gct cag tat aag aaa aac aaa cac		9674
Gln Ser Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His		
3170	3175	3180
agg cat tcc atc aca aat cct ttg gct gtg ctt tgt gag ttt atc agt		9722
Arg His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser		
3185	3190	3195
cag agc atc aaa tcc ttt gac agg cat ttt gaa aaa aac aga aac aat		9770
Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn Asn		
3200	3205	3210
gca tta gat ttt gtc acc aaa tcc tat aat gaa aca aaa att aag ttt		9818
Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile Lys Phe		
3215	3220	3225 3230
gat aag tac aaa gct gaa aaa tct cac gac gag ctc ccc agg acc ttt		9866
Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro Arg Thr Phe		
3235	3240	3245
caa att cct gga tac act gtt cca gtt gtc aat gtt gaa gtg tct cca		9914
Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val Glu Val Ser Pro		
3250	3255	3260
ttc acc ata gag atg tcg gca ttc ggc tat gtg ttc cca aaa gca gtc		9962
Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val Phe Pro Lys Ala Val		

3265	3270	3275	
agc atg cct agt ttc tcc atc cta ggt tct gac gtc cgt gtg cct tca Ser Met Pro Ser Phe Ser Ile Leu Gly Ser Asp Val Arg Val Pro Ser 3280 3285 3290			10010
tac aca tta atc ctg cca tca tta gag ctg cca gtc ctt cat gtc cct Tyr Thr Leu Ile Leu Pro Ser Leu Glu Leu Pro Val Leu His Val Pro 3295 3300 3305 3310			10058
aga aat ctc aag ctt tct ctt cca cat ttc aag gaa ttg tgt acc ata Arg Asn Leu Lys Leu Ser Leu Pro His Phe Lys Glu Leu Cys Thr Ile 3315 3320 3325			10106
agc cat att ttt att cct gcc atg ggc aat att acc tat gat ttc tcc Ser His Ile Phe Ile Pro Ala Met Gly Asn Ile Thr Tyr Asp Phe Ser 3330 3335 3340			10154
ttt aaa tca agt gtc atc aca ctg aat acc aat gct gaa ctt ttt aac Phe Lys Ser Ser Val Ile Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn 3345 3350 3355			10202
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Ile Arg Trp Lys Asn Glu Val Arg Ile His Ser Gly Ser Phe Gln Ser	
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Lys	Tyr	Tyr	Glu	Leu	Glu	Glu	Lys	Ile	Val	Ser	Leu	Ile	Lys	Asn	Leu	
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ctg ctg ctg ctg ctg ctg gcg ggc gcc agg gcc gaa gag gaa atg ctg 96
Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
20 25 30
gaa aat gtc agc ctg gtc tgt cca aaa gat gcg acc cga ttc aag cac 144
Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
35 40 45
ctc cgg aag tac aca tac aac tat gag gct gag agt tcc agt gga gtc 192
Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
50 55 60
cct ggg act gct gat tca aga agt gcc acc agg atc aac tgc aag gtt 240
Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
65 70 75 80
gag ctg gag gtt ccc cag ctc tgc agc ttc atc ctg aag acc agc cag 288
Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
85 90 95
tgc acc ctg aaa gag gtg tat ggc ttc aac cct gag ggc aaa gcc ttg 336
Cys Thr Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
100 105 110
ctg aag aaa acc aag aac tct gag gag ttt gct gca gcc atg tcc agg 384
Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
115 120 125
tat gag ctc aag ctg gcc att cca gaa ggg aag cag gtt ttc ctt tac 432
Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
130 135 140
ccg gag aaa gat gaa cct act tac atc ctg aac atc aag agg ggc atc 480
Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145 150 155 160

att tct gcc ctc ctg gtt ccc cca gag aca gaa gaa gcc aag caa gtg Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val	528
165 170 175	
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180 185 190	
aag acg agg aag ggc aat gtg gca aca gaa ata tcc act gaa aga gac Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp	624
195 200 205	
ctg ggg cag tgt gat cgc ttc aag ccc atc cgc aca ggc atc agc cca Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro	672
210 215 220	
ctt gct ctc atc aaa ggc atg acc cgc ccc ttg tca act ctg atc agc Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser	720
225 230 235 240	
agc agc cag tcc tgt cag tac aca ctg gac gct aag agg aag cat gtg Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val	768
245 250 255	
gca gaa gcc atc tgc aag gag caa cac ctc ttc ctg cct ttc tcc tac Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr	816
260 265 270	
aag aat aag tat ggg atg gta gca caa gtg aca cag act ttg aaa ctt Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu	864
275 280 285	
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290 295 300	
aag atg ggc ctc gca ttt gag agc acc aaa tcc aca tca cct cca aag Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys	960
305 310 315 320	
cag gcc gaa gct gtt ttg aag act ctc cag gaa ctg aaa aaa cta acc Gln Ala Glu Ala Val Leu Lys Thr Leu Gln Glu Leu Lys Lys Leu Thr	1008
325 330 335	
atc tct gag caa aat atc cag aga gct aat ctc ttc aat aag ctg gtt Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val	1056
340 345 350	
act gag ctg aga ggc ctc agt gat gaa gca gtc aca tct ctc ttg cca Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro	1104
355 360 365	
cag ctg att gag gtg tcc agc ccc atc act tta caa gcc ttg gtt cag Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln	1152
370 375 380	
tgt gga cag cct cag tgc tcc act cac atc ctc cag tgg ctg aaa cgt Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg	1200
385 390 395 400	

gtg cat gcc aac ccc ctt ctg ata gat gtg gtc acc tac ctg gtg gcc	1248
Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala	
405 410 415	
ctg atc ccc gag ccc tca gca cag cag ctg cga gag atc ttc aac atg	1296
Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met	
420 425 430	
gcg agg gat cag cgc agc cga gcc acc ttg tat gcg ctg agc cac gcg	1344
Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala	
435 440 445	
gtc aac aac tat cat aag aca aac cct aca ggg acc cag gag ctg ctg	1392
Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu	
450 455 460	
gac att gct aat tac ctg atg gaa cag att caa gat gac tgc act ggg	1440
Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly	
465 470 475 480	
gat gaa gat tac acc tat ttg att ctg cgg gtc att gga aat atg ggc	1488
Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly	
485 490 495	
caa acc atg gag cag tta act cca gaa ctc aag tct tca atc ctg aaa	1536
Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys	
500 505 510	
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Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile	
515 520 525	
cag gct ctg cgg aaa atg gag cct aaa gac aag gac cag gag gtt ctt	1632
Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu	
530 535 540	
ctt cag act ttc ctt gat gat gct tct ccg gga gat aag cga ctg gct	1680
Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala	
545 550 555 560	
gcc tat ctt atg ttg atg agg agt cct tca cag gca gat att aac aaa	1728
Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys	
565 570 575	
att gtc caa att cta cca tgg gaa cag aat gag caa gtg aag aac ttt	1776
Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe	
580 585 590	
gtg gct tcc cat att gcc aat atc ttg aac tca gaa gaa ttg gat atc	1824
Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile	
595 600 605	
caa gat ctg aaa aag tta gtg aaa gaa gct ctg aaa gaa tct caa ctt	1872
Gln Asp Leu Lys Lys Leu Val Lys Glu Ala Leu Lys Glu Ser Gln Leu	
610 615 620	
cca act gtc atg gac ttc aga aaa ttc tct cgg aac tat caa ctc tac	1920
Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr	
625 630 635 640	
aaa tct gtt tct ctt cca tca ctt gac cca gcc tca gcc aaa ata gaa	1968
Lys Ser Val Ser Leu Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu	
645 650 655	

ggg aat ctt ata ttt gat cca aat aac tac ctt cct aaa gaa agc atg	2016
Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met	
660 665 670	
ctg aaa act acc ctc act gcc ttt gga ttt gct tca gct gac ctc atc	2064
Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile	
675 680 685	
gag att ggc ttg gaa gga aaa ggc ttt gag cca aca ttg gag gct cct	2112
Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Pro	
690 695 700	
ttt ggg aag caa gga ttt ttc cca gac agt gtc aac aaa gct ttg tac	2160
Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr	
705 710 715 720	
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Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp	
725 730 735	
cac ttt ggc tat acc aaa gat gat aaa cat gag cag gat atg gta aat	2256
His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn	
740 745 750	
gga ata atg ctc agt gtt gag aag ctg att aaa gat ttg aaa tcc aaa	2304
Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys	
755 760 765	
gaa gtc ccg gaa gcc aga gcc tac ctc cgc atc ttg gga gag gag ctt	2352
Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu	
770 775 780	
ggt ttt gcc agt ctc cat gac ctc cga ctc ctg gga aag ctg ctt ctg	2400
Gly Phe Ala Ser Leu His Asp Leu Arg Leu Leu Gly Lys Leu Leu Leu	
785 790 795 800	
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Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val	
805 810 815	
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Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met	
820 825 830	
gag aat gcc ttt gaa ctc ccc act gga gct gga tta cag ttg caa ata	2544
Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile	
835 840 845	
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Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu	
850 855 860	
gaa gta gcc aac atg cag gct gaa ctg gtg gca aaa ccc tcc gtg tct	2640
Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser	
865 870 875 880	
gtg gag ttt gtg aca aat atg ggc atc atc att ccg gac ttc gct agg	2688
Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg	
885 890 895	

agt ggg gtc cag atg aac acc aac ttc ttc cac gag tcg ggt ctg gag	2736
Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu	
900 905 910	
gct cat gtt gcc cta aaa gct ggg aag ctg aag ttt atc att cct tcc	2784
Ala His Val Ala Leu Lys Ala Gly Lys Leu Lys Phe Ile Ile Pro Ser	
915 920 925	
cca aag aga cca gtc aag ctg ctc agt gga ggc aac aca tta cat ttg	2832
Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu	
930 935 940	
gtc tct acc acc aaa acg gag gtc atc cca cct ctc att gag aac agg	2880
Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg	
945 950 955 960	
cag tcc tgg tca gtt tgc aag caa gtc ttt cct ggc ctg aat tac tgc	2928
Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys	
965 970 975	
acc tca ggc gct tac tcc aac gcc agc tcc aca gac tcc gcc tcc tac	2976
Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr	
980 985 990	
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Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr	
995 1000 1005	
gga gag att gag cag tat tct gtc agc gca acc tat gag ctc cag aga	3072
Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln Arg	
1010 1015 1020	
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Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln Ala Glu	
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ggc gcg aag cag act gag gct acc atg aca ttc aaa tat aat cgg cag	3168
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Ser Met Thr Leu Ser Ser Glu Val Gln Ile Pro Asp Phe Asp Val Asp	
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Leu Gly Thr Ile Leu Arg Val Asn Asp Glu Ser Thr Glu Gly Lys Thr	
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Ser Tyr Arg Leu Thr Leu Asp Ile Gln Asn Lys Lys Ile Thr Glu Val	
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gcc ctc atg ggc cac cta agt tgt gac aca aag gaa gaa aga aaa atc	3360
Ala Leu Met Gly His Leu Ser Cys Asp Thr Lys Glu Glu Arg Lys Ile	
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aag ggt gtt att tcc ata ccc cgt ttg caa gca gaa gcc aga agt gag	3408
Lys Gly Val Ile Ser Ile Pro Arg Leu Gln Ala Glu Ala Arg Ser Glu	
1125 1130 1135	
atc ctc gcc cac tgg tcg cct gcc aaa ctg ctt ctc caa atg gac tca	3456
Ile Leu Ala His Trp Ser Pro Ala Lys Leu Leu Leu Gln Met Asp Ser	
1140 1145 1150	

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Ser Ala Thr Ala Tyr Gly Ser Thr Val Ser Lys Arg Val Ala Trp His	
1155 1160 1165	
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Tyr Asp Glu Glu Lys Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val	
1170 1175 1180	
gat acc aaa aaa atg act tcc aat ttc cct gtg gat ctc tcc gat tat	3600
Asp Thr Lys Lys Met Thr Ser Asn Phe Pro Val Asp Leu Ser Asp Tyr	
1185 1190 1195 1200	
cct aag agc ttg cat atg tat gct aat aga ctc ctg gat cac aga gtc	3648
Pro Lys Ser Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val	
1205 1210 1215	
cct caa aca gac atg act ttc cgg cac gtg ggt tcc aaa tta ata gtt	3696
Pro Gln Thr Asp Met Thr Phe Arg His Val Gly Ser Lys Leu Ile Val	
1220 1225 1230	
gca atg agc tca tgg ctt cag aag gca tct ggg agt ctt cct tat acc	3744
Ala Met Ser Ser Trp Leu Gln Lys Ala Ser Gly Ser Leu Pro Tyr Thr	
1235 1240 1245	
cag act ttg caa gac cac ctc aat agc ctg aag gag ttc aac ctc cag	3792
Gln Thr Leu Gln Asp His Leu Asn Ser Leu Lys Glu Phe Asn Leu Gln	
1250 1255 1260	
aac atg gga ttg cca gac tcc cac atc cca gaa aac ctc ttc tta aaa	3840
Asn Met Gly Leu Pro Asp Ser His Ile Pro Glu Asn Leu Phe Leu Lys	
1265 1270 1275 1280	
agc gat ggc cgc gtc aaa tat acc ttg aac aag aac agt ttg aaa att	3888
Ser Asp Gly Arg Val Lys Tyr Thr Leu Asn Lys Asn Ser Leu Lys Ile	
1285 1290 1295	
gag att cct ttg cct ttt ggt ggc aaa tcc tcc aga gat cta aag atg	3936
Glu Ile Pro Leu Pro Phe Gly Gly Lys Ser Ser Arg Asp Leu Lys Met	
1300 1305 1310	
tta gag act gtt agg aca cca gcc ctc cac ttc aag tct gtg gga ttc	3984
Leu Glu Thr Val Arg Thr Pro Ala Leu His Phe Lys Ser Val Gly Phe	
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cat ctg cca tct cga gag ttc caa gtc cct act ttt acc att ccc aag	4032
His Leu Pro Ser Arg Glu Phe Gln Val Pro Thr Phe Thr Ile Pro Lys	
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Leu Tyr Gln Leu Gln Val Pro Leu Leu Gly Val Leu Asp Leu Ser Thr	
1345 1350 1355 1360	
aat gtc tac agc aac ttg tac aac tgg tcc gcc tcc tac agt ggt ggc	4128
Asn Val Tyr Ser Asn Leu Tyr Asn Trp Ser Ala Ser Tyr Ser Gly Gly	
1365 1370 1375	
aac acc agc aca gac cat ttc agc ctt cgg gct cgt tac cac atg aag	4176
Asn Thr Ser Thr Asp His Phe Ser Leu Arg Ala Arg Tyr His Met Lys	
1380 1385 1390	

gct gac tct gtg gtt gac ctg ctt tcc tac aat gtg caa gga tct gga	4224
Ala Asp Ser Val Val Asp Leu Leu Ser Tyr Asn Val Gln Gly Ser Gly	
1395 1400 1405	
gaa aca aca tat gac cac aag aat acg ttc aca cta tca tgt gat ggg	4272
Glu Thr Thr Tyr Asp His Lys Asn Thr Phe Thr Leu Ser Cys Asp Gly	
1410 1415 1420	
tct cta cgc cac aaa ttt cta gat tcg aat atc aaa ttc agt cat gta	4320
Ser Leu Arg His Lys Phe Leu Asp Ser Asn Ile Lys Phe Ser His Val	
1425 1430 1435 1440	
gaa aaa ctt gga aac aac cca gtc tca aaa ggt tta cta ata ttc gat	4368
Glu Lys Leu Gly Asn Asn Pro Val Ser Lys Gly Leu Leu Ile Phe Asp	
1445 1450 1455	
gca tct agt tcc tgg gga cca cag atg tct gct tca gtt cat ttg gac	4416
Ala Ser Ser Ser Trp Gly Pro Gln Met Ser Ala Ser Val His Leu Asp	
1460 1465 1470	
tcc aaa aag aaa cag cat ttg ttt gtc aaa gaa gtc aag att gat ggg	4464
Ser Lys Lys Lys Gln His Leu Phe Val Lys Glu Val Lys Ile Asp Gly	
1475 1480 1485	
cag ttc aga gtc tct tcg ttc tat gct aaa ggc aca tat ggc ctg tct	4512
Gln Phe Arg Val Ser Ser Phe Tyr Ala Lys Gly Thr Tyr Gly Leu Ser	
1490 1495 1500	
tgt cag agg gat cct aac act ggc cgg ctc aat gga gag tcc aac ctg	4560
Cys Gln Arg Asp Pro Asn Thr Gly Arg Leu Asn Gly Glu Ser Asn Leu	
1505 1510 1515 1520	
agg ttt aac tcc tcc tac ctc caa ggc acc aac cag ata aca gga aga	4608
Arg Phe Asn Ser Ser Tyr Leu Gln Gly Thr Asn Gln Ile Thr Gly Arg	
1525 1530 1535	
tat gaa gat gga acc ctc tcc ctc acc tcc acc tct gat ctg caa agt	4656
Tyr Glu Asp Gly Thr Leu Ser Leu Thr Ser Thr Ser Asp Leu Gln Ser	
1540 1545 1550	
ggc atc att aaa aat act gct tcc cta aag tat gag aac tac gag ctg	4704
Gly Ile Ile Lys Asn Thr Ala Ser Leu Lys Tyr Glu Asn Tyr Glu Leu	
1555 1560 1565	
act tta aaa tct gac acc aat ggg aag tat aag aac ttt gcc act tct	4752
Thr Leu Lys Ser Asp Thr Asn Gly Lys Tyr Lys Asn Phe Ala Thr Ser	
1570 1575 1580	
aac aag atg gat atg acc ttc tct aag caa aat gca ctg ctg cgt tct	4800
Asn Lys Met Asp Met Thr Phe Ser Lys Gln Asn Ala Leu Leu Arg Ser	
1585 1590 1595 1600	
gaa tat cag gct gat tac gag tca ttg agg ttc ttc agc ctg ctt tct	4848
Glu Tyr Gln Ala Asp Tyr Glu Ser Leu Arg Phe Phe Ser Leu Leu Ser	
1605 1610 1615	
gga tca cta aat tcc cat ggt ctt gag tta aat gct gac atc tta ggc	4896
Gly Ser Leu Asn Ser His Gly Leu Glu Leu Asn Ala Asp Ile Leu Gly	
1620 1625 1630	
act gac aaa att aat agt ggt gct cac aag gcg aca cta agg att ggc	4944

Thr Asp Lys Ile Asn Ser Gly Ala His Lys Ala Thr Leu Arg Ile Gly	
1635	1640 1645
caa gat gga ata tct acc agt gca acg acc aac ttg aag tgt agt ctc	4992
Gln Asp Gly Ile Ser Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser Leu	
1650	1655 1660
ctg gtg ctg gag aat gag ctg aat gca gag ctt ggc ctc tct ggg gca	5040
Leu Val Leu Glu Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser Gly Ala	
1665	1670 1675 1680
tct atg aaa tta aca aca aat ggc cgc ttc agg gaa cac aat gca aaa	5088
Ser Met Lys Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn Ala Lys	
	1685 1690 1695
ttc agt ctg gat ggg aaa gcc gcc ctc aca gag cta tca ctg gga agt	5136
Phe Ser Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu Gly Ser	
	1700 1705 1710
gct tat cag gcc atg att ctg ggt gtc gac agc aaa aac att ttc aac	5184
Ala Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile Phe Asn	
	1715 1720 1725
ttc aag gtc agt caa gaa gga ctt aag ctc tca aat gac atg atg ggc	5232
Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met Met Gly	
	1730 1735 1740
tca tat gct gaa atg aaa ttt gac cac aca aac agt ctg aac att gca	5280
Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn Ile Ala	
	1745 1750 1755 1760
ggc tta tca ctg gac ttc tct tca aaa ctt gac aac att tac agc tct	5328
Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile Tyr Ser Ser	
	1765 1770 1775
gac aag ttt tat aag caa act gtt aat tta cag cta cag ccc tat tct	5376
Asp Lys Phe Tyr Lys Gln Thr Val Asn Leu Gln Leu Gln Pro Tyr Ser	
	1780 1785 1790
ctg gta act act tta aac agt gac ctg aaa tac aat gct ctg gat ctc	5424
Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr Asn Ala Leu Asp Leu	
	1795 1800 1805
acc aac aat ggg aaa cta cgg cta gaa ccc ctg aag ctg cat gtg gct	5472
Thr Asn Asn Gly Lys Leu Arg Leu Glu Pro Leu Lys Leu His Val Ala	
	1810 1815 1820
ggt aac cta aaa gga gcc tac caa aat aat gaa ata aaa cac atc tat	5520
Gly Asn Leu Lys Gly Ala Tyr Gln Asn Asn Glu Ile Lys His Ile Tyr	
	1825 1830 1835 1840
gcc atc tct tct gct gcc tta tca gca agc tat aaa gca gac act gtt	5568
Ala Ile Ser Ser Ala Ala Leu Ser Ala Ser Tyr Lys Ala Asp Thr Val	
	1845 1850 1855
gct aag gtt cag ggt gtg gag ttt agc cat ggg ctc aac aca gac atc	5616
Ala Lys Val Gln Gly Val Glu Phe Ser His Gly Leu Asn Thr Asp Ile	
	1860 1865 1870
gct ggg ctg gct tca gcc att gac atg agc aca aac tat aat tca gac	5664
Ala Gly Leu Ala Ser Ala Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp	
	1875 1880 1885

tca ctg cat ttc agc aat gtc ttc cgt tct gta atg gcc ccg ttt acc	5712
Ser Leu His Phe Ser Asn Val Phe Arg Ser Val Met Ala Pro Phe Thr	
1890 1895 1900	
atg acc atc gat gca cat aca aat ggc aat ggg aaa ctc gct ctc tgg	5760
Met Thr Ile Asp Ala His Thr Asn Gly Asn Gly Lys Leu Ala Leu Trp	
1905 1910 1915 1920	
gga gaa cat act ggg cag ctg tat agc aaa ttc ctg ttg aaa gca gaa	5808
Gly Glu His Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu Lys Ala Glu	
1925 1930 1935	
cct ctg gca ttt act ttc tct cat gat tac aaa ggc tcc aca agt cat	5856
Pro Leu Ala Phe Thr Phe Ser His Asp Tyr Lys Gly Ser Thr Ser His	
1940 1945 1950	
cat ctc gtg tct agg aaa agc atc agt gca gct ctt gaa cac aaa gtc	5904
His Leu Val Ser Arg Lys Ser Ile Ser Ala Ala Leu Glu His Lys Val	
1955 1960 1965	
agt gcc ctg ctt act cca gct gag cag aca ggc acc tgg aaa ctc aag	5952
Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys Leu Lys	
1970 1975 1980	
acc caa ttt aac aac aat gaa tac agc cag gac ttg gat gct tac aac	6000
Thr Gln Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala Tyr Asn	
1985 1990 1995 2000	
act aaa gat aaa att ggc gtg gag ctt act gga cga act ctg gct gac	6048
Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr Leu Ala Asp	
2005 2010 2015	
cta act cta cta gac tcc cca att aaa gtg cca ctt tta ctc agt gag	6096
Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu Leu Leu Ser Glu	
2020 2025 2030	
ccc atc aat atc aat gat gct tta gag atg aga gat gcc gtt gag aag	6144
Pro Ile Asn Ile Asn Asp Ala Leu Glu Met Arg Asp Ala Val Glu Lys	
2035 2040 2045	
ccc caa gaa ttt aca att gtt gct ttt gta aag tat gat aaa aac caa	6192
Pro Gln Glu Phe Thr Ile Val Ala Phe Val Lys Tyr Asp Lys Asn Gln	
2050 2055 2060	
gat gtt cac tcc att aac ctc cca ttt ttt gag acc ttg caa gaa tat	6240
Asp Val His Ser Ile Asn Leu Pro Phe Phe Glu Thr Leu Gln Glu Tyr	
2065 2070 2075 2080	
ttt gag agg aat cga caa acc att ata gtt gta ctg gaa aac gta cag	6288
Phe Glu Arg Asn Arg Gln Thr Ile Ile Val Val Leu Glu Asn Val Gln	
2085 2090 2095	
aga aac ctg aag cac atc aat att gat caa ttt gta aga aaa tac aga	6336
Arg Asn Leu Lys His Ile Asn Ile Asp Gln Phe Val Arg Lys Tyr Arg	
2100 2105 2110	
gca gcc ctg gga aaa ctc cca cag caa gct aat gat tat ctg aat tca	6384
Ala Ala Leu Gly Lys Leu Pro Gln Gln Ala Asn Asp Tyr Leu Asn Ser	
2115 2120 2125	
ttc aat tgg gag aga caa gtt tca cat gcc aag gag aaa ctg act gct	6432

Phe Asn Trp Glu Arg Gln Val Ser His Ala Lys Glu Lys Leu Thr Ala	
2130	2135 2140
ctc aca aaa aag tat aga att aca gaa aat gat ata caa att gca tta	6480
Leu Thr Lys Lys Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile Ala Leu	
2145	2150 2155 2160
gat gat gcc aaa atc aac ttt aat gaa aaa cta tct caa ctg cag aca	6528
Asp Asp Ala Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu Gln Thr	
2165	2170 2175
tat atg ata caa ttt gat cag tat att aaa gat agt tat gat tta cat	6576
Tyr Met Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp Leu His	
2180	2185 2190
gat ttg aaa ata gct att gct aat att att gat gaa atc att gaa aaa	6624
Asp Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile Glu Lys	
2195	2200 2205
tta aaa agt ctt gat gag cac tat cat acc cgt gta aat tta gta aaa	6672
Leu Lys Ser Leu Asp Glu His Tyr His Thr Arg Val Asn Leu Val Lys	
2210	2215 2220
aca atc cat gat cta cat ttg ttt att gaa aat att gat ttt aac aaa	6720
Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe Asn Lys	
2225	2230 2235 2240
agt gga agt agt act gca tcc tgg att caa aat gtg gat act aag tac	6768
Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp Thr Lys Tyr	
2245	2250 2255
caa atc aga atc cag ata caa gaa aaa ctg cag cag ctt aag aga cac	6816
Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln Leu Lys Arg His	
2260	2265 2270
ata cag aat ata gac atc cag cac cta gct gga aag tta aaa caa cac	6864
Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly Lys Leu Lys Gln His	
2275	2280 2285
att gag gct att gat gtt aga gtg ctt tta gat caa ttg gga act aca	6912
Ile Glu Ala Ile Asp Val Arg Val Leu Leu Asp Gln Leu Gly Thr Thr	
2290	2295 2300
att tca ttt gaa aga ata aat gat gtt ctt gag cat gtc aaa cac ttt	6960
Ile Ser Phe Glu Arg Ile Asn Asp Val Leu Glu His Val Lys His Phe	
2305	2310 2315 2320
gtt ata aat ctt att ggg gat ttt gaa gta gct gag aaa atc aat gcc	7008
Val Ile Asn Leu Ile Gly Asp Phe Glu Val Ala Glu Lys Ile Asn Ala	
2325	2330 2335
ttc aga gcc aaa gtc cat gag tta atc gag agg tat gaa gta gac caa	7056
Phe Arg Ala Lys Val His Glu Leu Ile Glu Arg Tyr Glu Val Asp Gln	
2340	2345 2350
caa atc cag gtt tta atg gat aaa tta gta gag ttg gcc cac caa tac	7104
Gln Ile Gln Val Leu Met Asp Lys Leu Val Glu Leu Ala His Gln Tyr	
2355	2360 2365
aag ttg aag gag act att cag aag cta agc aat gtc cta caa caa gtt	7152
Lys Leu Lys Glu Thr Ile Gln Lys Leu Ser Asn Val Leu Gln Gln Val	
2370	2375 2380

aag ata aaa gat tac ttt gag aaa ttg gtt gga ttt att gat gat gct	7200
Lys Ile Lys Asp Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp Asp Ala	
2385 2390 2395 2400	
gtc aag aag ctt aat gaa tta tct ttt aaa aca ttc att gaa gat gtt	7248
Val Lys Lys Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu Asp Val	
2405 2410 2415	
aac aaa ttc ctt gac atg ttg ata aag aaa tta aag tca ttt gat tac	7296
Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe Asp Tyr	
2420 2425 2430	
cac cag ttt gta gat gaa acc aat gac aaa atc cgt gag gtg act cag	7344
His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val Thr Gln	
2435 2440 2445	
aga ctc aat ggt gaa att cag gct ctg gaa cta cca caa aaa gct gaa	7392
Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys Ala Glu	
2450 2455 2460	
gca tta aaa ctg ttt tta gag gaa acc aag gcc aca gtt gca gtg tat	7440
Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala Val Tyr	
2465 2470 2475 2480	
ctg gaa agc cta cag gac acc aaa ata acc tta atc atc aat tgg tta	7488
Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile Asn Trp Leu	
2485 2490 2495	
cag gag gct tta agt tca gca tct ttg gct cac atg aag gcc aaa ttc	7536
Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met Lys Ala Lys Phe	
2500 2505 2510	
cga gag act cta gaa gat aca cga gac cga atg tat caa atg gac att	7584
Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met Tyr Gln Met Asp Ile	
2515 2520 2525	
cag cag gaa ctt caa cga tac ctg tct ctg gta ggc cag gtt tat agc	7632
Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu Val Gly Gln Val Tyr Ser	
2530 2535 2540	
aca ctt gtc acc tac att tct gat tgg tgg act ctt gct gct aag aac	7680
Thr Leu Val Thr Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala Lys Asn	
2545 2550 2555 2560	
ctt act gac ttt gca gag caa tat tct atc caa gat tgg gct aaa cgt	7728
Leu Thr Asp Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala Lys Arg	
2565 2570 2575	
atg aaa gca ttg gta gag caa ggg ttc act gtt cct gaa atc aag acc	7776
Met Lys Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile Lys Thr	
2580 2585 2590	
atc ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct ctt cag	7824
Ile Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala Leu Gln	
2595 2600 2605	
aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca gat ttg	7872
Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr Asp Leu	
2610 2615 2620	
agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat ata aaa	7920

ctt acc ctg gat agc aac act aaa tac ttc cac aaa ttg aac atc ccc	8688
Leu Thr Leu Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn Ile Pro	
2885 2890 2895	
aaa ctg gac ttc tct agt cag gct gac ctg cgc aac gag atc aag aca	8736
Lys Leu Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile Lys Thr	
2900 2905 2910	
ctg ttg aaa gct ggc cac ata gca tgg act tct tct gga aaa ggg tca	8784
Leu Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys Gly Ser	
2915 2920 2925	
tgg aaa tgg gcc tcg ccc aga ttc tca gat gag gga aca cat gaa tca	8832
Trp Lys Trp Ala Ser Pro Arg Phe Ser Asp Glu Gly Thr His Glu Ser	
2930 2935 2940	
caa att agt ttc acc ata gaa gga ccc ctc act tcc ttt gga ctg tcc	8880
Gln Ile Ser Phe Thr Ile Glu Gly Pro Leu Thr Ser Phe Gly Leu Ser	
2945 2950 2955 2960	
aat aag atc aat agc aaa cac cta aga gta aac caa aac ttg gtt tat	8928
Asn Lys Ile Asn Ser Lys His Leu Arg Val Asn Gln Asn Leu Val Tyr	
2965 2970 2975	
gaa tct ggc tcc ctc aac ttt tct aaa ctt gaa att caa tca caa gtc	8976
Glu Ser Gly Ser Leu Asn Phe Ser Lys Leu Glu Ile Gln Ser Gln Val	
2980 2985 2990	
gat tcc cag cat gtg ggc cac agt gtt cta act gct aaa ggc atg gca	9024
Asp Ser Gln His Val Gly His Ser Val Leu Thr Ala Lys Gly Met Ala	
2995 3000 3005	
ctg ttt gga gaa ggg aag gca gag ttt act ggg agg cat gat gct cat	9072
Leu Phe Gly Glu Gly Lys Ala Glu Phe Thr Gly Arg His Asp Ala His	
3010 3015 3020	
tta aat gga aag gtt att gga act ttg aaa aat tct ctt ttc ttt tca	9120
Leu Asn Gly Lys Val Ile Gly Thr Leu Lys Asn Ser Leu Phe Phe Ser	
3025 3030 3035 3040	
gcc cag cca ttt gag atc acg gca tcc aca aac aat gaa ggg aat ttg	9168
Ala Gln Pro Phe Glu Ile Thr Ala Ser Thr Asn Asn Glu Gly Asn Leu	
3045 3050 3055	
aaa gtt cgt ttt cca tta agg tta aca ggg aag ata gac ttc ctg aat	9216
Lys Val Arg Phe Pro Leu Arg Leu Thr Gly Lys Ile Asp Phe Leu Asn	
3060 3065 3070	
aac tat gca ctg ttt ctg agt ccc agt gcc cag caa gca agt tgg caa	9264
Asn Tyr Ala Leu Phe Leu Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln	
3075 3080 3085	
gta agt gct agg ttc aat cag tat aag tac aac caa aat ttc tct gct	9312
Val Ser Ala Arg Phe Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala	
3090 3095 3100	
gga aac aac gag aac att atg gag gcc cat gta gga ata aat gga gaa	9360
Gly Asn Asn Glu Asn Ile Met Glu Ala His Val Gly Ile Asn Gly Glu	
3105 3110 3115 3120	
gca aat ctg gat ttc tta aac att cct tta aca att cct gaa atg cgt	9408

Ala Asn Leu Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg	
3125 3130 3135	
cta cct tac aca ata atc aca act cct cca ctg aaa gat ttc tct cta	9456
Leu Pro Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu	
3140 3145 3150	
tgg gaa aaa aca ggc ttg aag gaa ttc ttg aaa acg aca aag caa tca	9504
Trp Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser	
3155 3160 3165	
ttt gat tta agt gta aaa gct cag tat aag aaa aac aaa cac agg cat	9552
Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg His	
3170 3175 3180	
tcc atc aca aat cct ttg gct gtg ctt tgt gag ttt atc agt cag agc	9600
Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser Gln Ser	
3185 3190 3195 3200	
atc aaa tcc ttt gac agg cat ttt gaa aaa aac aga aac aat gca tta	9648
Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn Asn Ala Leu	
3205 3210 3215	
gat ttt gtc acc aaa tcc tat aat gaa aca aaa att aag ttt gat aag	9696
Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile Lys Phe Asp Lys	
3220 3225 3230	
tac aaa gct gaa aaa tct cac gac gag ctc ccc agg acc ttt caa att	9744
Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro Arg Thr Phe Gln Ile	
3235 3240 3245	
cct gga tac act gtt cca gtt gtc aat gtt gaa gtg tct cca ttc acc	9792
Pro Gly Tyr Thr Val Pro Val Val Asn Val Glu Val Ser Pro Phe Thr	
3250 3255 3260	
ata gag atg tcg gca ttc ggc tat gtg ttc cca aaa gca gtc agc atg	9840
Ile Glu Met Ser Ala Phe Gly Tyr Val Phe Pro Lys Ala Val Ser Met	
3265 3270 3275 3280	
cct agt ttc tcc atc ata ggt tct gac gtc cgt gtg cct tca tac aca	9888
Pro Ser Phe Ser Ile Ile Gly Ser Asp Val Arg Val Pro Ser Tyr Thr	
3285 3290 3295	
tta atc ctg cca tca tta gag ctg cca gtc ctt cat gtc cct aga aat	9936
Leu Ile Leu Pro Ser Leu Glu Leu Pro Val Leu His Val Pro Arg Asn	
3300 3305 3310	
ctc aag ctt tct ctt cca gat ttc aag gaa ttg tgt acc ata agc cat	9984
Leu Lys Leu Ser Leu Pro Asp Phe Lys Glu Leu Cys Thr Ile Ser His	
3315 3320 3325	
att ttt att cct gcc atg ggc aat att acc tat gat ttc tcc ttt aaa	10032
Ile Phe Ile Pro Ala Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys	
3330 3335 3340	
tca agt gtc atc aca ctg aat acc aat gct gaa ctt ttt aac cag tca	10080
Ser Ser Val Ile Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn Gln Ser	
3345 3350 3355 3360	
gat att gtt gct cat ctc ctt tct tca tct tca tct gtc att gat gca	10128
Asp Ile Val Ala His Leu Leu Ser Ser Ser Ser Ser Val Ile Asp Ala	

3365	3370	3375	
ctg cag tac aaa tta gag ggc acc aca aga ttg aca aga aaa agg gga Leu Gln Tyr Lys Leu Glu Gly Thr Thr Arg Leu Thr Arg Lys Arg Gly 3380 3385 3390			10176
ttg aag tta gcc aca gct ctg tct ctg agc aac aaa ttt gtg gag ggt Leu Lys Leu Ala Thr Ala Leu Ser Leu Ser Asn Lys Phe Val Glu Gly 3395 3400 3405			10224
agt cat aac agt act gtg agc tta acc acg aaa aat atg gaa gtg tca Ser His Asn Ser Thr Val Ser Leu Thr Thr Lys Asn Met Glu Val Ser 3410 3415 3420			10272
gtg gca aaa acc aca aaa ccg gaa att cca att ttg aga atg aat ttc Val Ala Lys Thr Thr Lys Pro Glu Ile Pro Ile Leu Arg Met Asn Phe 3425 3430 3435 3440			10320
aag caa gaa ctt aat gga aat acc aag tca aaa cct act gtc tct tcc Lys Gln Glu Leu Asn Gly Asn Thr Lys Ser Lys Pro Thr Val Ser Ser 3445 3450 3455			10368
tcc atg gaa ttt aag tat gat ttc aat tct tca atg ctg tac tct acc Ser Met Glu Phe Lys Tyr Asp Phe Asn Ser Ser Met Leu Tyr Ser Thr 3460 3465 3470			10416
gct aaa gga gca gtt gac cac aag ctt agc ttg gaa agc ctc acc tct Ala Lys Gly Ala Val Asp His Lys Leu Ser Leu Glu Ser Leu Thr Ser 3475 3480 3485			10464
tac ttt tcc att gag tca tct acc aaa gga gat gtc aag ggt tcg gtt Tyr Phe Ser Ile Glu Ser Ser Thr Lys Gly Asp Val Lys Gly Ser Val 3490 3495 3500			10512
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ttg aat tcc aag agc aca cgg tct tca gtg aag ctg cag ggc act tcc Leu Asn Ser Lys Ser Thr Arg Ser Ser Val Lys Leu Gln Gly Thr Ser 3525 3530 3535			10608
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Cys Leu Asn Leu His Lys Phe Asn Glu Phe Ile Gln Asn Glu Leu Gln	

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 ggccaaaatg gagtatctac cagtgaaca accagcttga ggtacagtcc cctgatgctg 240
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ggccgcttca aggaacacaa tgcaaaattc agcctagatg ggaaagctac cctcacagag 360
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 aacttcaaga tc 432

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 aaaatagcta tagctagtat tatagatcaa atcatggaaa aattaaaaat tcttgatgaa 300
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 aagtatcaag tcagaatctg gatacaagaa atattgcaac agtttaagac acagattcag 480
 aatacaaaaca tcccatacct ggctgaaaaa ctgaaacaac agattgaggc tattgatgtc 540
 agagtgcctt tagatcaatt gagaactaca attccatttc gtataataaa ggacattatt 600
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 caatattttt attccagcca tgggcaacat tacctatgaa ttttccttca aatcaacgat 420
 cattacactg aataccaatg ctggacttta taaccaatca gacattgttg cccatatact 480
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 ctgaggctac catgacattc aaatataatc ggcagagtat gaccttgtcc agtgaagtcc 240
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 agggcagaaa gtcttacaga ctcaccctgg acattcagaa ccagaaaatt actgagggtca 360
 ccctcatggg ccacctaagt tgtgacacaa aggaagaagg aaaaatcaaa ggtgttattt 420
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gtcttccatt	ctgtaatggc	tccatttacc	atgaccattg	atacacatac	aaatggcaac	300
gggaaacttg	ttctctgggg	agaacatact	gggcagctgt	atagcaaatt	cctgttgaaa	360
gcagaacctc	tggcattcac	tttctctcat	gattacaaag	gctccacgag	tcacatcttc	420
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